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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/035,660	12/28/2001	Choon-Seng Tan	200302391-1	4624

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EXAMINER

PATEL, NIKETA I

ART UNIT	PAPER NUMBER
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2181

DATE MAILED: 04/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/035,660	Applicant(s) TAN ET AL.	
	Examiner Niketa I. Patel	Art Unit 2181	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 14-19 is/are rejected.
- 7) ☒ Claim(s) 13 and 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Supervisor
FRITZ FLEMING
PRIMARY EXAMINER
GROUP 2100
AM 2181
3/31/2006

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) The invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-7, 9-12 and 14-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Wisner et al. U.S. Patent Number: 6,944,133 B2 (hereinafter “*Wisner*”).
3. **Referring to claims 1, 9 and 14,** *Wisner* teaches a method, device and a system of controlling a failover process in a data storage system including a host, a host bus adapter, a communication fabric including data paths, and standby and active storage controllers [see figure 1], comprising: detecting with an adapter a failover condition [see column 7, lines 35-44 and column 8, lines 20-33 and column 9, lines 21-37]; responsive to the detecting, operating the adapter to match the failover condition to a particular failover action in a failover rule set [see column 9, lines 51-67 and column 10, lines 1-13 and column 11, lines 8-28]; and performing with the adapter the matched failover action [see column 11, lines 53-67 and column 12, lines 1-5.]
4. **Referring to claim 2,** *Wisner* teaches that the detecting, operating, and the failover action performing are completed without acts initiated by the host [see column 8, lines 20-33 and column 9, lines 21-37, 51-67 and column 10, lines 1-13 and column 11, lines 8-28, 53-64.]

5. **Referring to claim 3**, *Wisner* teaches that the detecting includes identifying a particular failure type and wherein the particular fail over action is selected from an action subset corresponding to the particular failure type [see column 8, lines 20-33 and column 9, lines 21-37, 51-67 and column 10, lines 1-13 and column 11, lines 8-28, 53-64.]

6. **Referring to claim 4**, *Wisner* teaches that the failure type is selected from the group consisting of inter-controller link down, the active storage controller failed, the standby controller failed, an active path failed, and a standby path failed [see column 8, lines 20-33 and column 9, lines 21-37, 51-67 and column 10, lines 1-13 and column 11, lines 8-28, 53-64.]

7. **Referring to claim 5**, *Wisner* teaches to detecting with the host bus adapter a failover condition, *Wisner* is silent about prior to the performing, determining with the host bus adapter if all active paths have failed and if all active paths determined failed, skipping the failover action performing when the host bus adapter determines either all other available paths have failed or a standby path is marked as unusable. However, this feature is deemed to be inherent since *Wisner* to determine a failover condition and in response to the failover condition rerouting data through an alternate rout [see column 8, lines 20-33 and column 9, lines 21-37, 51-67 and column 10, lines 1-13 and column 11, lines 8-28, 53-64.] If all the routs have failed then there would be no alternate route for the system, therefore it would have to skip the performance of the failover action.

8. **Referring to claim 6**, *Wisner* teaches further including after the failover action performing, operating the host bus adapter to initiate failback when a controller in a preferred slot is replaced, when the controller in the preferred slot is rebooted, and when unusable paths become usable [see column 12, lines 65-67 and column 13, lines 1-3.]

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9. **Referring to claim 7**, *Wisner* teaches performing load distribution with the host bus adapter between the host and the controllers [see column 3, lines 55-64.]

10. **Referring to claim 10**, *Wisner* teaches that the failover actions are selected by the failover mechanism from a failover rule set [see column 8, lines 20-33 and column 9, lines 21-37, 51-67 and column 10, lines 1-13 and column 11, lines 8-28, 53-64.]

11. **Referring to claim 11**, *Wisner* teaches that the failover mechanism is further configured to determine at the time of the detecting, operating conditions within the data storage system, to determine whether the operating conditions match a set of failover conditions, and if matching, to select the failover action corresponding to the operating conditions [see column 8, lines 20-33 and column 9, lines 21-37, 51-67 and column 10, lines 1-13 and column 11, lines 8-28, 53-64.]

12. **Referring to claim 12**, *Wisner* teaches that the failover conditions are specific to the detected redundancy failure [see column 9, lines 45-50.]

13. **Referring to claim 15**, *Wisner* teaches that the host bus adapter detects a potential failure in redundancy and determines whether to initiate the failover action by determining whether failover operating circumstances and failover operating conditions for the potential failure are satisfied [see column 8, lines 20-33 and column 9, lines 21-37, 51-67 and column 10, lines 1-13 and column 11, lines 8-28, 53-64.]

14. **Referring to claim 16**, *Wisner* teaches that the failover operating circumstances require when an active path in the communication fabric fails that at least one path to the controllers is available and that a path to the standby controller is usable [see column 8, lines 20-33 and column 9, lines 21-37, 51-67 and column 10, lines 1-13 and column 11, lines 8-28, 53-64.]

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15. **Referring to claim 17**, *Wisner* teaches that the initiated failover action is selected from the set of failover actions based on existing ones of the failover operating conditions [see column 8, lines 20-33 and column 9, lines 21-37, 51-67 and column 10, lines 1-13 and column 11, lines 8-28, 53-64.]

16. **Referring to claim 18**, *Wisner* teaches that the data storage devices are grouped into subsets and wherein the host bus adapter is configured to perform the failover action for the subsets when a particular storage device within the subset requires the failover action [see column 8, lines 20-33 and column 9, lines 21-37, 51-67 and column 10, lines 1-13 and column 11, lines 8-28, 53-64.]

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. Claims 8, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Wisner* et al. U.S. Patent Number: 6,944,133 B2 (hereinafter “*Wisner*”) and further in view of *Bittel* et al. U.S. Patent Number: 6,820,173 B1 (hereinafter “*Bittel*”).

19. **Referring to claims 8 and 19**, *Wisner* is silent regarding enforcing with the host bus adapter anti-thrashing rules comprising preventing the performing from being completed more than set number of times per pre-set monitoring interval. *Bittel* teaches a use of anti-thrashing in order to prevent discarding the predicted address prematurely in the event that there are more

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data streams presented by the processor then there are predicted addresses tracked [see column 7, lines 11-19.]

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention that an anti-thrashing was an old and well-known type of safeguard to prevent the system from falling into an endless loop. It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to implement anti-thrashing safeguard to prevent the system from falling into an endless loop.

Response to Arguments

20. Applicant's arguments filed 01/05/2006 have been fully considered. The following arguments are not persuasive. The applicant argues that *Wisner* does not teach (1) detecting with the host bus adapter a failover condition (2) operating the host bus adapter to match the failover condition to a particular failover action in a failover rule set (3) performing with the host bus adapter the matched failover action (4) a connector linking the host bus adapter to a processor of the host server (5) the failover mechanism presents a single logical unit number (LUN) entity to operating system device drivers in the host processor that is discoverable a plurality of times and wherein the failover actions are initiated without prior communication with the host processor and (6) , at pages 2-7 of the Remark's section.

The examiner respectfully disagrees with these arguments. Foremost, the gist of the arguments is addressed. *Wisner* teach a host bus adapter capable [see figure 1, element 108, the intelligent controller] of detecting failover condition and performing failover action [see column 7, lines 5-11, 35-45.] The definition of 'host adapter' as defined in Microsoft Computer

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Dictionary states: a device for connecting a peripheral to the main computer, also called: controller, host bus adapter. In this case *Wisner's* controller provides connectivity between a file server and a storage unit.

As per the first argument, *Wisner* teaches detecting with the host bus adapter a failover condition [see column 7, lines 5-11, 35-45.]

As per the second argument, *Wisner* teaches operating the host bus adapter to match the failover condition to a particular failover action in a failover rule set [see column 9, lines 51-67 and column 10, lines 1-13 and column 11, lines 8-28.]

As per the third argument, *Wisner* teaches performing with the host bus adapter the matched failover action [see column 11, lines 53-67 and column 12, lines 1-5.]

As per the fourth argument, *Wisner* teaches a connector linking the host bus adapter to a processor of the host server [see column 7, lines 5-11.]

21. Applicant's argument, see page 6, filed 01/05/2006, with respect to claim 13 has been fully considered and are persuasive. The rejection of claim 13 has been withdrawn.

Allowable Subject Matter

22. Claims 13 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record, taken alone and/or in combination with other, does not teach and/or fairly suggest the limitation of wherein the host bus adapter presents a

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single logical unit number (LUN) entity to each of the operating system device drivers that is discoverable multiple times, in combination with other recited limitations.

Conclusion

23. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Niketa I. Patel whose telephone number is (571) 272 4156. The examiner can normally be reached on M-F 8:00 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fritz Fleming can be reached on (571) 272 4145. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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03/29/2006

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